Failing the Grade: School Bus Pollution & Children's Health

Patricia Monahan

Union of Concerned Scientists

Clean Cities Conference

May 13, 2002

Outline

- School bus/diesel pollution and children's health
- Grading school bus fleets
- Cleaner alternatives
- Federal funding for cleaner school buses

School Bus Pollution & Public Health

- Soot: Linked to missed school days, asthma, hospitalizations, chronic bronchitis, pneumonia, heart disease, & premature death
- Smog: Impairs the respiratory system, reduced lung capacity, asthma
  - EPA estimates smog leads to 10 to 20% of all summertime respiratory hospital visits

Diesel Pollution
7 Public Health

- Air Toxics: Cancer risk, immune system disorders, reproductive problems
  - In CA, 70% of cancer risk from air pollution attributed to diesel
  - Nationwide, air pollution regulators estimate 125,000 excess cancers attributed to diesel

Children Face Greater Risks

- Developing lungs
- Higher breathing rates
- Higher asthma rates
  - 10 million lost school days per year
- 10 year USC study (interim results) shows fine PM and NOx in high pollution areas can lead to:
  - up to 10% lung capacity loss
  - worse than 2nd hand smoke
  - may cause asthma

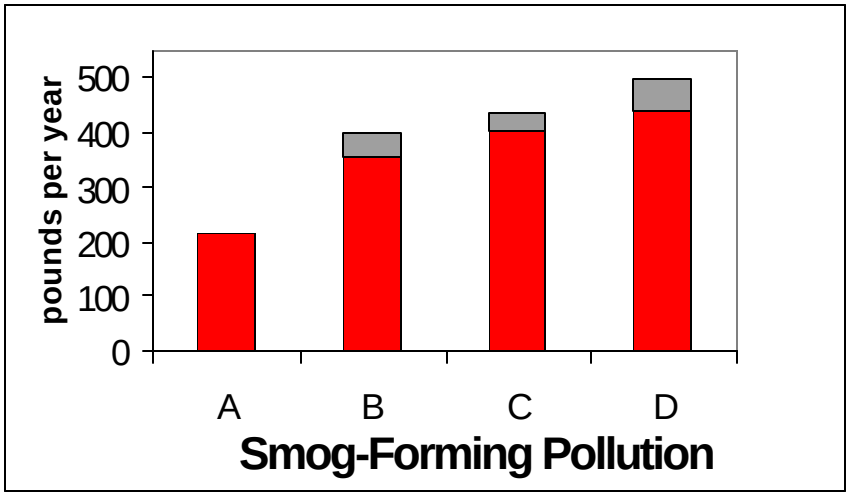
Diesel vs CNG Bus

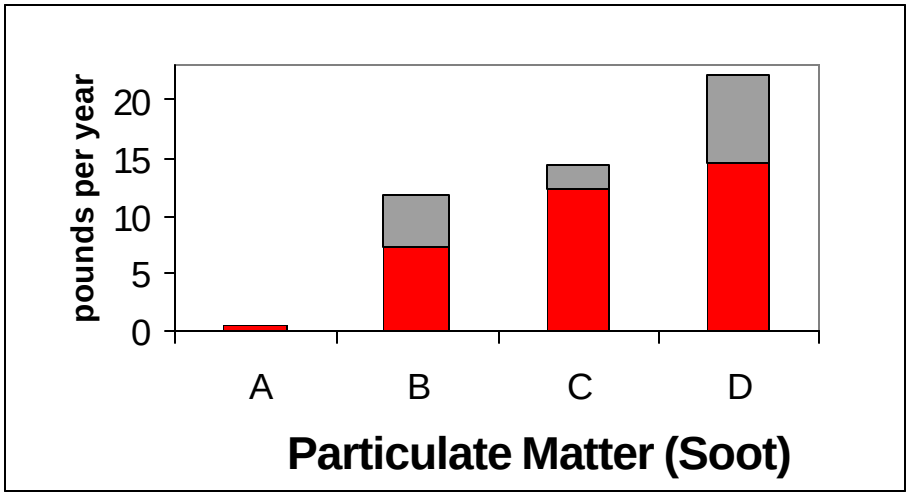
Average Diesel:
14 lbs/yr soot
417 lbs/yr smog forming gases

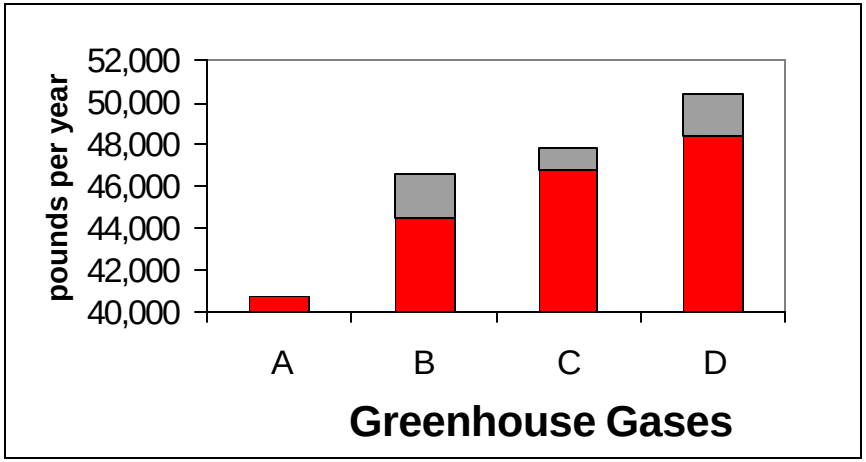
New Diesel Bus:
5.6 lbs/yr soot
322 lbs/yr smog forming gases

Natural Gas Bus:
0.5 lbs/yr soot
215 lbs/yr smog forming gases

Grading School Bus Fleets: Criteria







School Bus Report Card

Ahead of the Curve (All "Bs")	Middle of the Road ("B-" to "C" GPA)		Behind the Curve ("C-" to "D+" GPA)		Flunked Out (All "Ds")
Alabama	Connecticut	New Jersey	Alaska	Nevada	California
Delaware *	Florida	New Mexico	Arizona	Ohio	Washington
District of Columbia*	Hawaii	New York	Arkansas	Oklahoma	
Maryland*	Idaho	North Carolina	Colorado	South Carolina	
Massachusetts	Illinois	North Dakota	Georgia	South Dakota	
Missouri	Indiana	Oregon	Iowa	Utah	
Pennsylvania	Kansas	Rhode Island	Louisiana	Vermont	
	Kentucky	Tennessee	Minnesota	Virginia	
	Maine	Texas	Montana	Wyoming	
	Michigan	West Virginia	Nebraska		
	Mississippi	Wisconson			
	New Hampshire				

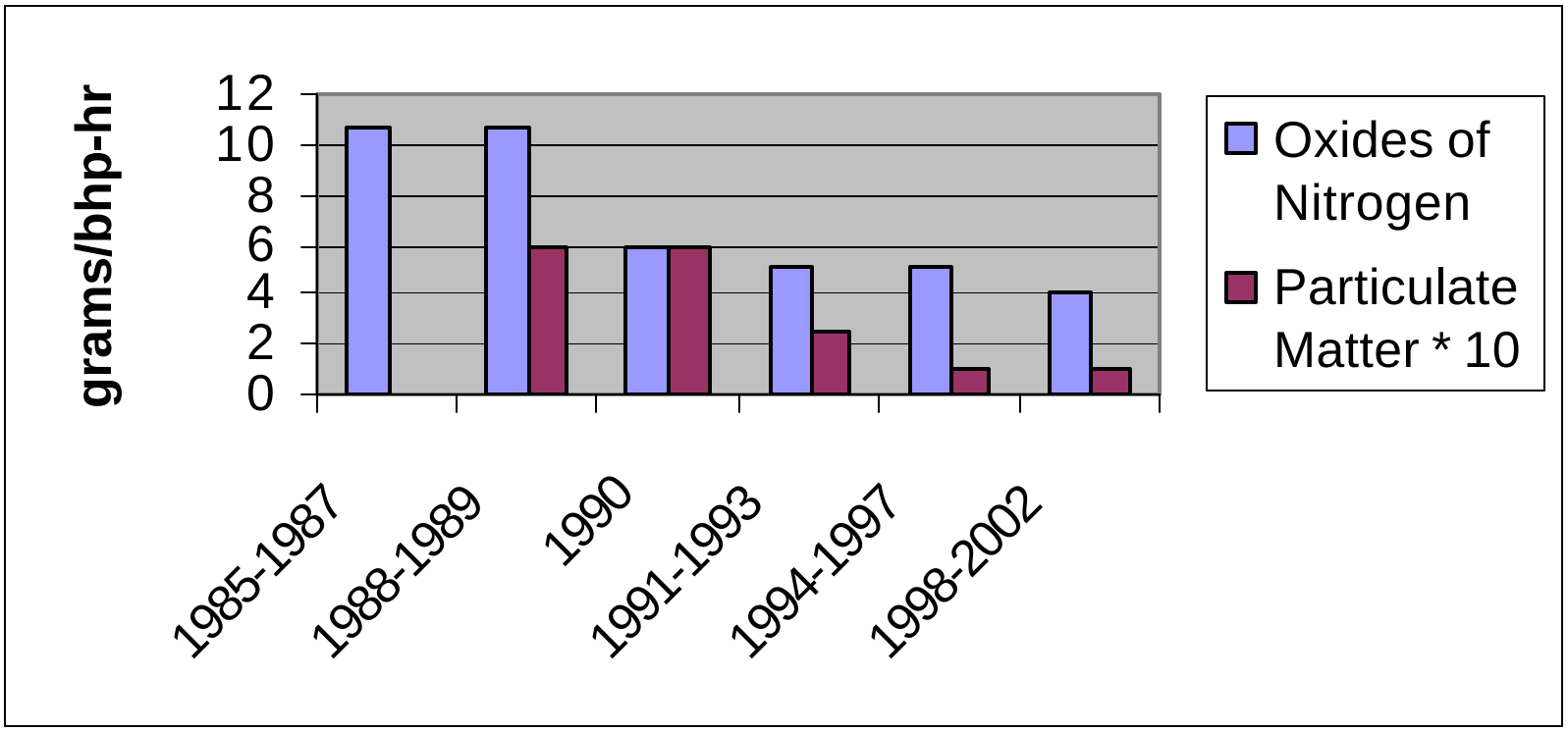
Teacher's Comments

- 25 million children in the U.S. ride 450,000 school buses, 90% powered by diesel
- No State received an "A" or even came close
- Only 6 States & DC were ranked ahead of the curve, with a "B" average
- 19 states maintain 3,000 buses built before 1977, which don't have to meet more protective federal safety standards
- ALL STATES NEED TO IMPROVE

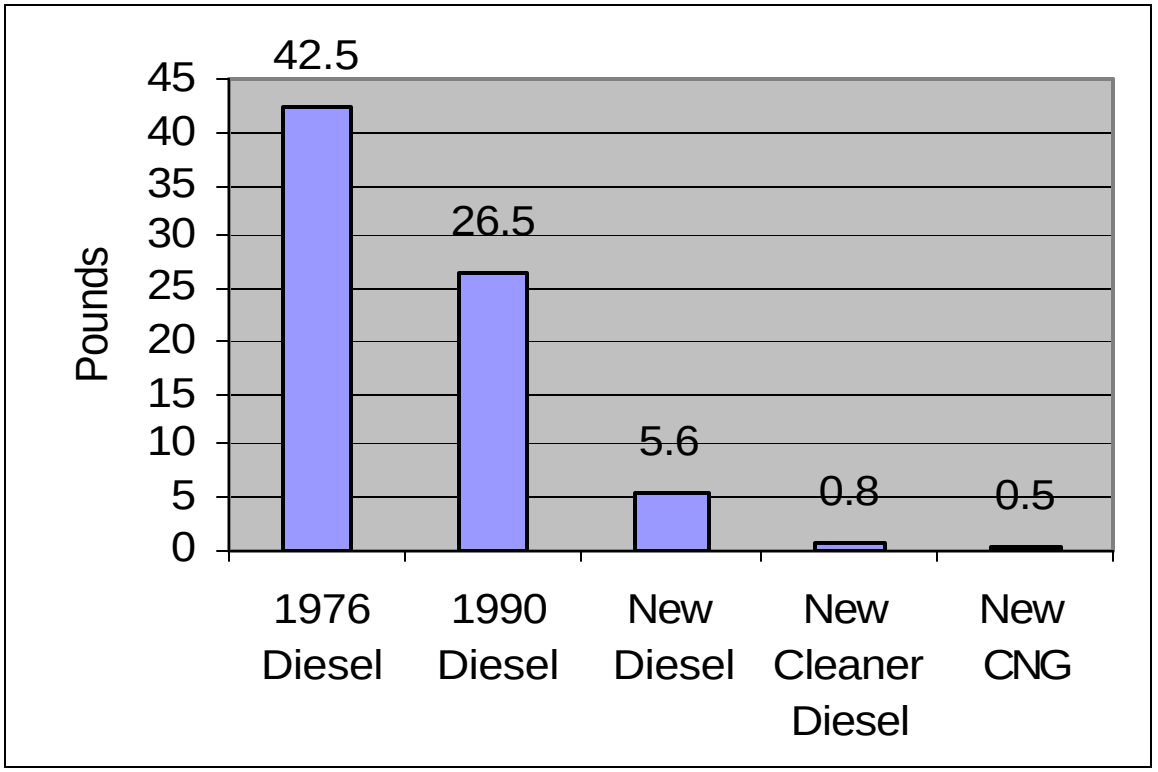
Certification Standards

Have Become Progressively Stronger:

Older Buses Pose Greater Risks



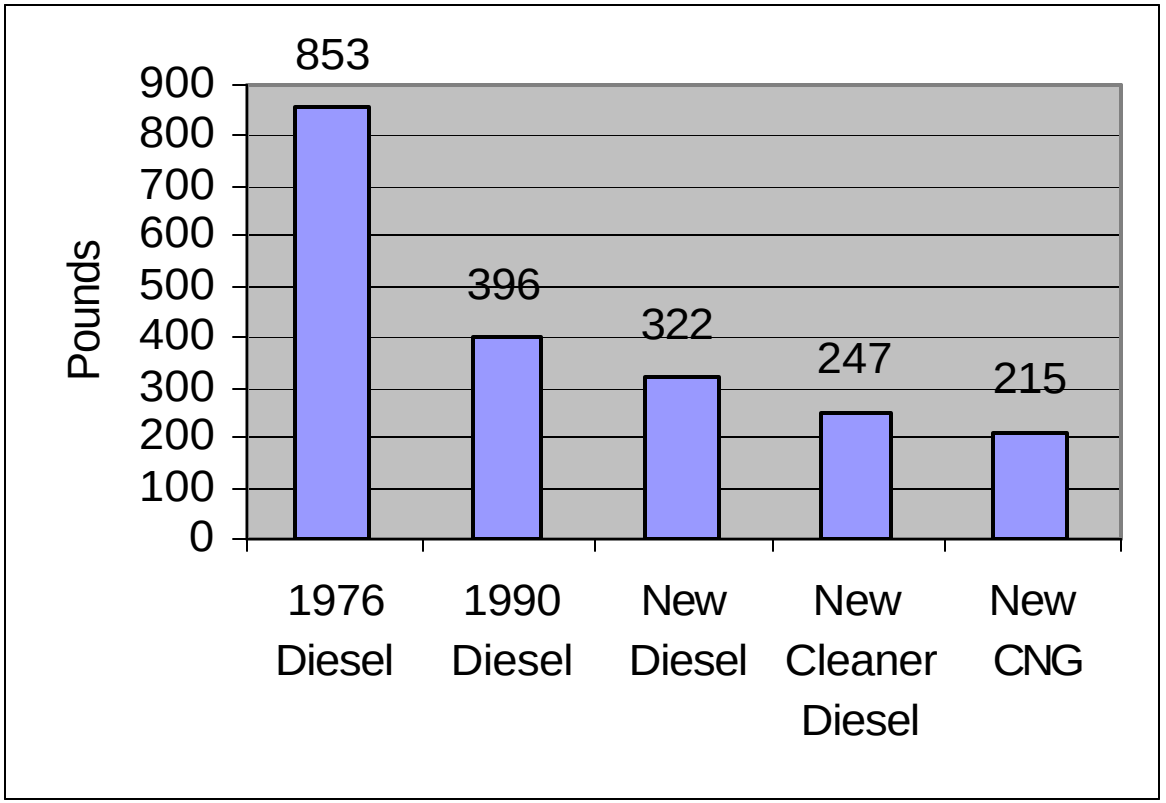
Annual Emissions of Soot:



Estimates based on UCS modeling.

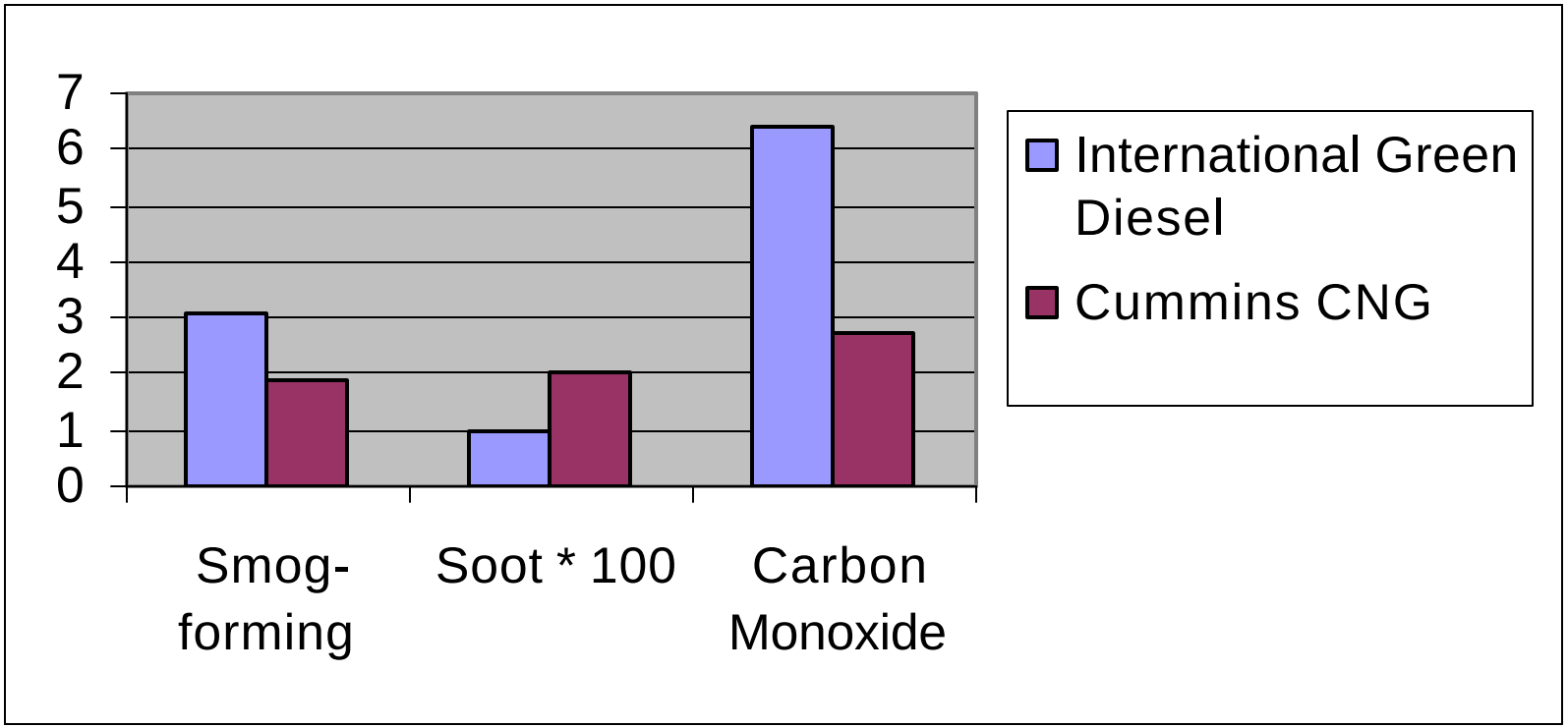
Annual Emissions of Smog-Forming Pollutants

(NOx & NMHC)



Estimates based on UCS modeling.

Low Emission Diesel vs CNG: Certification Data



Funding for Cleaner School Buses

- Clean Cities
  - Provides incremental cost difference
  - Nearly $500,000 in funds allocated to cleaner school buses in 2001
- Federal funding
  - Recent House and Senate energy bills include $300 million national grant program over 5 years for cleaner school buses
  - Qualifying fuels include natural gas, propane, ethanol, and low sulfur diesel

Funding for Cleaner School Buses, cont'd

- Federal funding, cont'd
  - Replacement program for oldest, dirtiest buses
  - Funding for over 2,000 new buses
  - Local match of $15,000
  - Alternative fuel buses must meet specific pollution criteria
    - 90% lower than current soot standard
    - 50% lower than current standards for NOx & NMHC thru 2002, then drops further

Conclusions

- Alternative fuel buses should always have emission benefits compared with diesel, but diesel is getting cleaner
- Children & their developing lungs deserve the cleanest buses available
- Getting oldest, dirtiest buses off the road first should be a national priority